

1. (Previously presented) A directionally solidified article having more than one crystal comprising a high strength, corrosion and oxidation resistant nickel base superalloy which comprises a matrix and from about 0.4 to 1.5 vol. % of a phase based on tantalum carbide, the alloy consisting essentially of, in weight percent, of: 10 - 13.5% chromium; 8 - 10% cobalt; 1.25 - 2.5% molybdenum; 3.25 - 4.25% tungsten; 4.5 - 6% tantalum; 3.25 - 4.5% aluminum; 3 - 4.75% titanium; 0.0025 - 0.025% boron; up to about 0.05% zirconium; 0.05 - 0.15% carbon; and having no intentional addition of niobium; no intentional addition of hafnium; and

balance essentially nickel; wherein aluminum + titanium is between about 6.5 - 8%; said article having at least comparable hot corrosion resistance (measured at 1600° F.) and at least twice the oxidation resistance (measured at 2000° F) when compared with a directionally solidified having a nominal composition of 14 Cr, 4.9 Ti, 1.5 Mo, 3.8 W, 2.8 Ta, 3 Al, 9.5 Co, 0.01 B, 0.02 Zr, 0.1 C, and balance Ni, and without application of a solution heat treatment.

2. (original) The article of claim 1, wherein the article comprises a columnar grain, directionally solidified article.

3. (original) The article of claim 2, wherein the article has transverse ductility in excess of 5% at 1400° F and at 1800° F.

4. (canceled) The article of claim 1, wherein the article comprises a single crystal article including a high angle boundary of up to at least about 20°.

5. (original) The article of claim 1 having stress rupture resistance sufficient to ensure that a load of about 27 ksi applied ruptures only after more than 45 hours, and also has a time to 1% creep of more than 15 hours, at 1800° F.

6. (original) The article of claim 5, wherein stress rupture occurs only after more than 85 hours.

7. (original) The article of claim 1, having 11 - 13% chromium; 8.25 - 9.75% cobalt; 1.5 - 2.25% molybdenum; 3.4 - 4.3% tungsten; 4.7 - 5.5% tantalum; 3.3 - 4% aluminum; 3.75 - 4.3% titanium; 0.008 - 0.025% boron; up to about 0.04% zirconium; 0.04 - 0.15 carbon; wherein aluminum + titanium is between about 7 - 8%.

8. (original) The article of claim 1, having about 12% chromium; 9% cobalt; 1.9% molybdenum; 3.8% tungsten; 5% tantalum; 3.6% aluminum; 4.1% titanium; 0.015% boron; 0.025% zirconium; 0.10% carbon; up to about 0.02 Zr and having no intentional addition of niobium; no intentional addition of hafnium; balance essentially nickel.

9. (original) The article of claim 1, wherein the article comprises a gas turbine engine component.

10. (original) The article of claim 9, comprising a turbine blade or vane.

11. (original) The article of claim 1, further characterized by oxidation resistance at 2000° F of roughly 2.5X, and creep rupture life at 1400° F of roughly 2.4X and at 1800° F of at least roughly 1.5X a similar article having a nominal composition of 14 Cr, 4.9 Ti, 1.5 Mo, 3.8 W, 2.8 Ta, 3 Al, 9.5 Co, 0.01 B, 0.02 Zr, 0.1 C, and balance Ni.

12. (Previously presented) A high strength, corrosion resistant, nickel base superalloy adapted for use in columnar grain directionally solidified articles, comprising in weight percent of about 12 % chromium; 9 % cobalt; 1.9 % molybdenum; 3.8 % tungsten; 5 % tantalum; 3.6 % aluminum; 4.1 % titanium; 0.015 % boron; 0.1% carbon; and having no intentional addition (and in any event less than about 0.02%) zirconium and no intentional amount of niobium; balance essentially nickel and incidental impurities, and wherein

aluminum + titanium is about 7.7 %; and including a matrix containing from about 0.4 to 1.5 vol. % of a phase based on tantalum carbide, the article is characterized by oxidation resistance at 2000° F of roughly 2.5X and creep rupture life at 1400° F of roughly 2.4X compared to a similar article having a nominal composition of 14 Cr, 4.9 Ti, 1.5 Mo, 3.8 W, 2.8 Ta, 3 Al, 9.5 Co, 0.01 B, 0.02 Zr, 0.1 C, and balance Ni, and without application of a solution heat treatment.

13. (original) The alloy of claim 9, comprising a gas turbine engine component.

14. (original) The article of claim 13, comprising a turbine blade or vane.

15. (new) A method of producing directionally solidified article having more than one crystal comprising a high strength, corrosion and oxidation resistant nickel base superalloy, comprising the steps of:

melting an alloy;

casting the alloy to form an article having a composition consisting of in weight percent 10 - 13.5% chromium; 8 - 10% cobalt; 1.25 - 2.5% molybdenum; 3.25 - 4.25% tungsten; 4.5 - 6% tantalum; 3.25 - 4.5% aluminum; 3 - 4.75% titanium; 0.0025 - 0.025% boron; up to about 0.05% zirconium; 0.05 - 0.15% carbon; and having no intentional addition of niobium; no intentional addition of hafnium and balance essentially nickel; wherein aluminum + titanium is between about 6.5 - 8%, and which comprises a matrix and from about 0.4 to 1.5 vol. % of a phase based on tantalum carbide; and

foregoing a solution heat treatment step prior to use, said article having at least comparable hot corrosion resistance (measured at 1600° F.) and at least twice the oxidation resistance (measured at 2000° F) when compared with a directionally solidified article having a nominal composition of 14 Cr, 4.9 Ti, 1.5 Mo, 3.8 W, 2.8 Ta, 3 Al, 9.5 Co, 0.01 B, 0.02 Zr, 0.1 C, and balance Ni, and having good creep resistance as cast and without application of a solution heat treatment.

16. (new) The method of claim 15, further comprising the step of machining the article.

17. (new) The method of claim 15, further comprising the step of applying an oxidation and/or corrosion resistant coating to the article.

18. (new) The method of claim 15, where in the article has at least one internal passage, further comprising the step of applying an oxidation and/or corrosion resistant coating to the internal passage.

19. (new) The method of claim 15, further comprising the step of applying a thermal barrier coating applied to one or more portions of the article.